

14. Bear Lake Section

Section Description

The Bear Lake Section is part of the Wyoming Basins Ecoregion. That portion of the Bear Lake Section located in Idaho is the subject of this review. It is located in southeast Idaho, bordering Wyoming to the east and Utah to the south. This section encompasses portions of the Bear River, Bear Lake, the

Bear Lake Valley, as well as dry hillsides and ridges to the east of the Lake, referred to as the Bear Lake Plateau. Bear Lake drains through Bear River, which is a tributary of Great Salt Lake (Fig. 14.1).

The Bear Lake Section ranges in elevation from 1,800–2,400 m (5,900–7,800 ft.).



Bear Lake, IDFG

Precipitation ranges from 40 to 100 cm (16 to 40 in) annually with most occurring during the fall, winter and spring. Precipitation occurs mostly as snow above 1,800 m (6,000 ft.). Summers are dry with low humidity. Temperature averages 1–9 °C (34–48 °F). The growing season ranges from 50–180 days.

Livestock grazing is the primary land use in this section; however, agricultural production also occurs, with hay and grain being the primary crops. Outdoor recreation is mostly associated with Bear Lake and includes angling, boating, and camping. Other outdoor recreation includes big game, upland game, and waterfowl hunting as well as wildlife viewing. There has been increasing residential development, including second homes, used seasonally, around Bear Lake and the associated uplands. In addition to private land ownership, the section includes Bear Lake National Wildlife Refuge (NWR) managed by the US Fish and Wildlife Service (FWS), public lands administered by the Bureau of Land Management (BLM), and State owned lands administered by the Idaho Department of Lands (IDL). Land ownership for the section is displayed on Fig. 14.1.

The Bear Lake Section contains diverse vegetation and land cover types (Figure 14.2) that provide habitat for a diversity of wildlife species, some of which are unique to the section.

Bear Lake contains a unique fish fauna that includes 4 endemic species: Bear Lake Whitefish (*Prosopium abyssicola*), Bonneville Cisco (*Prosopium gemmifer*), Bonneville Whitefish (*Prosopium spilonotus*), and Bear Lake Sculpin (*Cottus extensus*). Bonneville Cutthroat Trout (*Oncorhynchus clarkii utah*) is present in both Bear Lake and Bear River and represents an important conservation species for the Bear Lake Section. The nonnative Lake Trout (*Salvelinus namaycush*), Rainbow Trout (*Oncorhynchus mykiss*), Brook Trout (*Salvelinus fontinalis*), and Brown Trout (*Salmo trutta*) provide important recreational value; however, they are managed to ensure the persistence of viable populations of native fish species. Because Bear Lake spans both Idaho and Utah, fisheries resources in the lake are managed collaboratively by the 2 states through the implementation of the Bear Lake Fisheries Management Plan (Tolentino and Teuscher 2010).

Wetlands and riparian habitat associated with Bear Lake and the Bear River provide important habitat for a variety of wildlife, most notably migratory waterfowl, waterbirds, and Neotropical migratory landbirds, as well as amphibians and foraging herbivores (invertebrates to large ungulates). The wetlands, most of which are managed by the Bear Lake NWR, provide nesting habitat for important conservation focus species such as Trumpeter Swan (*Cygnus buccinator*), American Bittern (*Botaurus lentiginosus*), White-faced Ibis (*Plegadis chihi*), Franklin's Gull (*Leucophaeus pipixcan*), California Gull (*Larus californicus*), Caspian Tern (*Hydroprogne caspia*), and Clark's Grebe (*Aechmophorus clarkia*). It is one of only 6 locations in the state where White-faced Ibis nest, and one of only 5 where Franklin's Gull nests in the state. Wetlands, wet meadows, and managed pasture provide foraging habitat for White-faced Ibis and American Bittern, and nesting, foraging and staging habitat for Sandhill Crane (*Grus canadensis*).

The upland habitat in Bear Lake Section consists primarily of sagebrush-steppe rangeland managed for livestock grazing. Sagebrush species are predominantly Wyoming big sagebrush (*Artemisia tridentata* Nutt. subsp. *wyomingensis* Beetle & Young) and black sagebrush (*Artemisia nova* A. Nelson). Native grasses, such as bluebunch wheatgrass (*Agropyron specatum*) and needle and thread grass (*Stipa comata*), persist in the sage steppe habitat; however, cheatgrass (*Bromus tectorum*) is a common invasive species. Portions of native shrubsteppe habitat that were converted to agricultural production in the past have been enrolled in the Conservation Reserve Program (CRP) and are currently established as managed perennial grasslands, some of which have sagebrush recolonization. Populations of Greater Sage-Grouse (*Centrocercus urophasianus*), Sharp-tailed Grouse (*Tympanucus phasianellus*), and Pygmy Rabbit (*Brachylagus idahoensis*) depend on sagebrush-steppe habitat to maintain viable populations in the section. Sharp-tailed Grouse have benefited from the establishment of CRP acres.

The Bear Lake Plateau, situated east of Bear Lake and extending to the Wyoming border on the east and the Utah border on the south, is an important big game winter range. Mule Deer (*Odocoileus hemionus*) winter on the Plateau as well as use the riparian and wetlands associated with the Bear River and Bear Lake. In recent years, as many as 3,000 Mule Deer migrate to the Plateau to winter where snow depths are generally moderate to low on the area's extensive south and west facing slopes. The fall/winter movement through the corridor is generally southward from the CTNF through the Sheep Creek Hills across Highway 30, the Union Pacific Railroad tracks, and the Bear River. In addition, because the Bear Lake Plateau as well as adjacent areas contains predicted Wolverine (*Gulo gulo*) habitat (IDFG 2014) the corridor may

serve as a dispersal corridor for wolverine. Mule deer roadkills are common in the corridor in the fall, winter, and early spring. These roadkilled carcasses attract scavenging Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*), which are then subject to vehicle collisions as well.

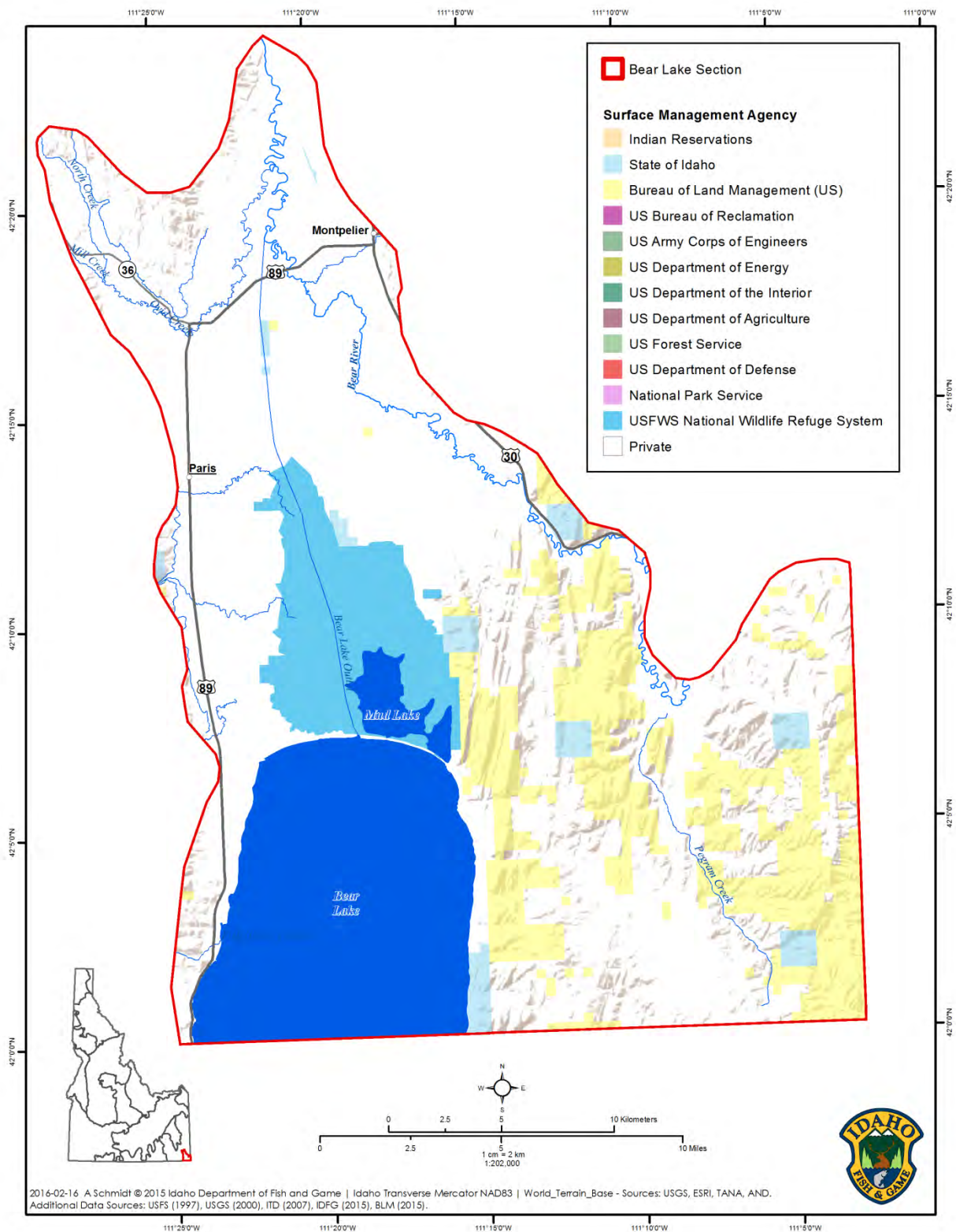


Fig. 14.1 Map of Bear Lake surface management

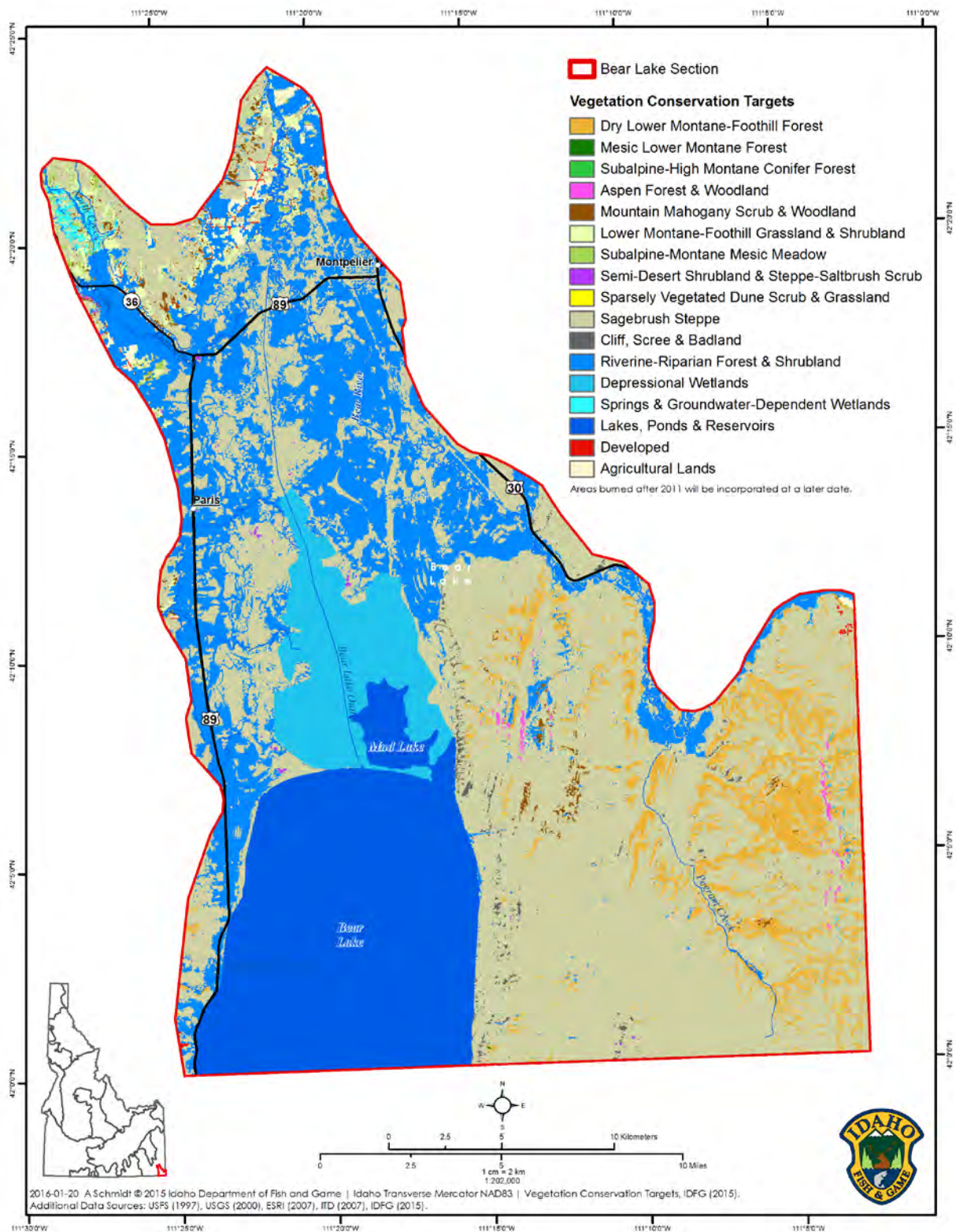


Fig. 14.2 Map of Bear Lake vegetation conservation targets

Conservation Targets in the Bear Lake Section

We selected 3 habitat based targets (1 terrestrial and 2 aquatic) that represent the major ecosystems in the Bear Lake Section as shown in Table 14.1. Each of these systems provides habitat for key species of greatest conservation need (SGCN), i.e., “nested targets” (Table 14.2) associated with each target. All SGCN management programs in the Bear Lake Section have a nexus with habitat management programs. We provide a high-level summary of current viability status for each target. Conservation of the habitat targets listed below should conserve most of the nested species within them. However, we determined that at least 3 taxonomic groups—Bear Lake Endemic Fish, colony-nesting birds, and Pollinators—face special conservation needs and thus are presented as explicit species targets as shown in Table 14.1. In addition, we identified a target to preserve an important wildlife movement corridor into the Bear Lake Plateau.

Table 14.1 At-a-glance table of conservation targets in the Bear Lake Section

Target	Target description	Target viability	Nested targets (SGCN)	
Sagebrush Steppe	This is the predominant habitat type in the Bear Lake Section, occurring on the Bear Lake Plateau on the east side of Bear Lake to the Wyoming and Utah borders and also present to a lesser extent on the west side of Bear Lake where it is more fragmented by agriculture and development. This target provides important habitat for a diversity of wildlife species, including several SGCN that are also considered sagebrush obligates.	<i>Fair.</i> Sagebrush habitat throughout the section has been reduced by development and conversion to agriculture. Some of agricultural conversion has been enrolled in CRP and there is some sagebrush recolonization into these fields. Fragmentation, invasive species, fire, and sagebrush treatments impact the viability of this target.	<i>Tier 1</i>	Greater Sage-Grouse
			<i>Tier 2</i>	Sharp-tailed Grouse Long-billed Curlew Ferruginous Hawk Golden Eagle Sage Thrasher Pygmy Rabbit Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
			<i>Tier 3</i>	Short-eared Owl Common Nighthawk Townsend's Big-eared Bat Western Small-footed Myotis
Riverine–Riparian Forest & Shrubland	This habitat target encompasses rivers and streams, including aquatic habitat and the associated riparian and wetland vegetation types. This target includes tributaries to Bear Lake and Bear River and its tributaries and Bear River flood plain. This target provided important habitat for a diversity	<i>Fair.</i> Riverine systems are fragmented by diversions that remove water for crop and pasture irrigation. In addition, water management has altered the hydrograph of riverine systems. Other impacts affecting this target include water quality, water quantity, and loss of riparian habitat. The	<i>Tier 1</i>	Bear Lake Springsnail
			<i>Tier 2</i>	Western Toad Northern Leopard Frog Trumpeter Swan White-faced Ibis Long-billed Curlew Silver-haired Bat Hoary Bat Rocky Mountain Dusksnail
			<i>Tier 3</i>	Sandhill Crane Townsend's Big-eared Bat Western Small-footed Myotis Little Brown Myotis California Floater

Target	Target description	Target viability	Nested targets (SGCN)	
	provide a dispersal corridor for wolverine. Mule deer mortality as they move through this corridor, due to vehicle collisions, is linked to golden and bald eagle mortality resulting from vehicle collisions as well.	'short-cut' between interstates 15 and 80. An estimated 3,000 mule deer move through this corridor to winter on the Bear Lake Plateau. Mule deer/vehicle collisions are common between Montpelier and the Wyoming Border, particularly during the fall and spring migration and during winter months. Mule deer mortalities provide scavenging opportunities for Bald and Golden eagles leading to eagle/vehicle collisions and subsequent eagle mortalities.		
Pollinators	The presence and distribution of SGCN pollinators is not well documented or understood in the Bear Lake Section.	Viability of this target is unknown in the Bear Lake Section.	Tier 1	Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee
			Tier 3	Hunt's Bumble Bee Kriemhild Fritillary Monarch

Table 14.2 Species of greatest conservation need (SGCN) and associated conservation targets in the Bear Lake Section

Taxon	Conservation targets					
	Sagebrush Steppe	Riverine-Riparian Forest & Shrubland	Depressional Wetlands	Bear Lake Endemic Fish	Movement Corridor	Pollinators
RAY-FINNED FISHES						
Bear Lake Whitefish (<i>Prosopium abyssicola</i>) ²				X		
Bonneville Cisco (<i>Prosopium gemmifer</i>) ²				X		
Bonneville Whitefish (<i>Prosopium spilonotus</i>) ²				X		
Bear Lake Sculpin (<i>Cottus extensus</i>) ²				X		
AMPHIBIANS						
Western Toad (<i>Anaxyrus boreas</i>) ²		X	X			
Northern Leopard Frog (<i>Lithobates pipiens</i>) ²		X	X			
BIRDS						
Trumpeter Swan (<i>Cygnus buccinator</i>) ²		X	X			
Greater Sage-Grouse (<i>Centrocercus urophasianus</i>) ¹	X					
Sharp-tailed Grouse (<i>Tympanuchus phasianellus</i>) ²	X					
Western Grebe (<i>Aechmophorus occidentalis</i>) ²			X			
Clark's Grebe (<i>Aechmophorus clarkii</i>) ²			X			
American Bittern (<i>Botaurus lentiginosus</i>) ²			X			
White-faced Ibis (<i>Plegadis chihi</i>) ²		X	X			
Ferruginous Hawk (<i>Buteo regalis</i>) ²	X					
Golden Eagle (<i>Aquila chrysaetos</i>) ²	X				X	
Sandhill Crane (<i>Grus canadensis</i>) ³		X	X			
Long-billed Curlew (<i>Numenius americanus</i>) ²	X	X				
Franklin's Gull (<i>Leucophaeus pipixcan</i>) ³			X			
California Gull (<i>Larus californicus</i>) ²			X			
Caspian Tern (<i>Hydroprogne caspia</i>) ²			X			
Black Tern (<i>Chlidonias niger</i>) ²			X			
Short-eared Owl (<i>Asio flammeus</i>) ³	X					
Common Nighthawk (<i>Chordeiles minor</i>) ³	X					
Sage Thrasher (<i>Oreoscoptes montanus</i>) ²	X					
MAMMALS						
Pygmy Rabbit (<i>Brachylagus idahoensis</i>) ²	X					
Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>) ³	X	X				
Silver-haired Bat (<i>Lasionycteris noctivagans</i>) ²		X				
Hoary Bat (<i>Lasiurus cinereus</i>) ²		X				
Western Small-footed Myotis (<i>Myotis ciliolabrum</i>) ³	X	X				
Little Brown Myotis (<i>Myotis lucifugus</i>) ³		X				
Wolverine ¹					X	
BIVALVES						
California Floater (<i>Anodonta californiensis</i>) ³		X				
AQUATIC GASTROPODS						

Taxon	Conservation targets					
	Sagebrush Steppe	Riverine-Riparian Forest & Shrubland	Depressional Wetlands	Bear Lake Endemic Fish	Movement Corridor	Pollinators
Pondsnail (<i>Stagnicola</i>) Species Group ³		X				
Rotund Physa (<i>Physella columbiana</i>) ³		X				
Rocky Mountain Duskysnail (<i>Colligyrus greggi</i>) ²		X				
Bear Lake Springsnail (<i>Pyrgulopsis pilsbryana</i>) ¹		X				
TERRESTRIAL GASTROPODS						
Lyrate Mountainsnail (<i>Oreohelix haydeni</i>) ²	X					
INSECTS						
A Tiger Beetle (<i>Cicindela decemnotata montevolans</i>) ²	X					
Hunt's Bumble Bee (<i>Bombus huntii</i>) ³						X
Morrison's Bumble Bee (<i>Bombus morrisoni</i>) ¹						X
Western Bumble Bee (<i>Bombus occidentalis</i>) ¹						X
Suckley's Cuckoo Bumble Bee (<i>Bombus suckleyi</i>) ¹						X
Kriemhild Fritillary (<i>Boloria kriemhild</i>) ³						X
Monarch (<i>Danaus plexippus</i>) ³						X
Utah Sallfly (<i>Sweltsa gaufini</i>) ³		X				

Target: Sagebrush Steppe

Sagebrush steppe is the most abundant habitat type in the Bear Lake Section, making up nearly 50% of the vegetation cover type in the section. The Bear Lake Plateau on the east side of Bear Lake to the Wyoming and Utah borders is predominantly sagebrush steppe; however, the habitat has been fragmented by past agricultural conversion, some of which has been enrolled in CRP. Portions of the section on the west side of Bear Lake also contain sagebrush-steppe habitat, although it has been fragmented by both agriculture and development.



Sagebrush-steppe habitat on the Bear Lake Plateau, IDFG

Sagebrush species found in the Bear Lake Section are predominantly Wyoming big sagebrush and black sagebrush. Native grasses, such as bluebunch wheatgrass and needle and thread persist in the sagebrush-steppe habitat and cheatgrass is a common invasive species. Agricultural areas that are enrolled in CRP are dominated by nonnative grass species, but sagebrush has begun to encroach into some fields.

A diversity of wildlife species rely on the sagebrush-steppe habitats found in the Bear Lake Section, including several SGCN. Of particular management concern are populations of Greater Sage-Grouse. The Bear Lake Plateau is identified as Priority Habitat Management Area for Sage-Grouse conservation (Fig. 14.3). Sagebrush steppe conservation and management actions that benefit Sage-Grouse are expected to benefit other sagebrush-dependent SGCN.

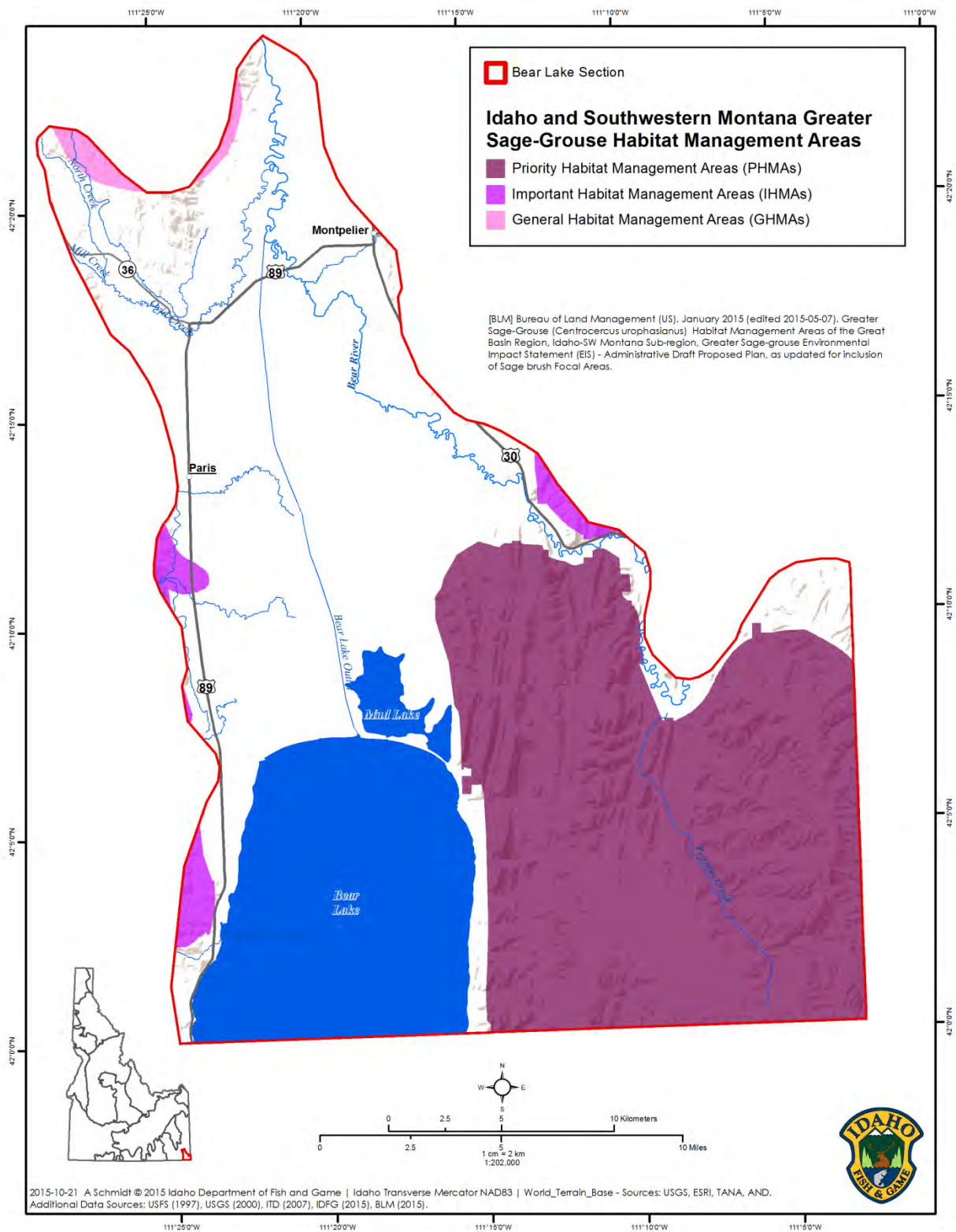


Fig. 14.3 Idaho and Southwestern Montana Greater Sage-Grouse Habitat Management Areas

Target Viability

Fair. Sagebrush-steppe habitat in the Bear Lake Section is generally in fair condition, and is functioning to provide important habitat for sagebrush obligates and other wildlife species. Sagebrush-steppe habitat has been reduced by development and conversion to agriculture. Some of the lands subject to agricultural conversion have been enrolled in CRP and there is some sagebrush recolonization into these fields. Conversion, fragmentation, invasive species, fire, and sagebrush treatments have resulted in not only loss of habitat, but also a decline in the condition of the remaining habitat in many areas. The patchwork of ownership that includes IDL and private property may increase the risk for further habitat loss or degradation from sagebrush treatment projects. BLM lands are fragments with some small acreage isolated tracts that may be subject to disposal in the future, creating an additional risk of potential degradation and loss of sagebrush habitat. The continuation of wildlife habitat enhancement and protection using CRP and other Farm Bill Programs is reliant on federal funding, as such adding an element of uncertainty to the wildlife habitat currently provided on some privately owned lands. Infrastructure, such as roads, power lines, and fences affect this habitat type and the wildlife species present. Invasive plants threaten the capability of this target to provide quality wildlife habitat.

Prioritized Threats and Strategies for Sagebrush Steppe

High rated threats to Sagebrush Steppe in the Bear Lake Section

Nonnative invasive plants

Invasive plant species is a high priority threat to sagebrush habitat in the Bear Lake Section. They have been identified as a primary to Sage-Grouse in Idaho in the Governor's Alternative (Otter 2012). They are also cited as a primary threat to shrubsteppe habitats by the US Fish and Wildlife Service (Fed Regist. 79[234]:72464–72465). The invasion of nonnative annual grasses—in particular cheatgrass and medusahead—is one of the primary drivers of larger, more intense rangeland fires across the Great Basin and directly threatens the habitat of Greater Sage-Grouse and other sagebrush-steppe dependent wildlife (DOI 2015). In the Bear Lake Section, cheatgrass has colonized the sagebrush-steppe habitat, and may influence fire severity and frequency in the future.

Objective	Strategy	Action(s)	Target SGCNs
Reduce invasive plants.	Implement actions to reduce the spread of invasive plants.	Promote certified weed-free seeds and forage. Enforce travel management plans.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
	Support the use	Explore the use of newly	Greater Sage-Grouse

Objective	Strategy	Action(s)	Target SGCNs
	of experimental approaches to control invasive plants.	developed products or actions to reduce cheatgrass.	Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
Protect key habitat from loss and degradation.	Implement appropriate management of brush treatments.	Consider wildlife benefits and reduce impacts to wildlife on all public land (BLM, IDL) brush treatments. Conduct treatments using techniques that will reduce the risk of increases of invasive species. Provide, where possible, input on private land brush treatments.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
Improve/increase native vegetation.	Use native seed and seedlings in habitat restoration projects.	Agency coordination on funding sources to support restoration projects. Collect local seed as sources for native plants to be used in restoration projects. Limit the use of nonnative plant species in restoration projects.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)

Improper livestock grazing management

In the context of this plan, “improper” is defined as grazing beyond the capacity of the resource in either direction (e.g., overuse such as along riparian areas that need protection; i.e., there needs to be seasonal adjustments). Negative impacts of grazing are typically associated with persistent heavy grazing. In the Governor's Alternative (Otter 2012), improper livestock grazing management is considered a secondary threat with monitoring and management actions tailored accordingly.

Livestock grazing can affect wildlife habitat in many ways (Krausman et al. 2009). For example, livestock grazing can change habitat features that directly influence birds by reducing plant

species diversity and biomass (Reynolds and Trost 1981, Bock and Webb 1984, Saab et al. 1995). Alternatively, changes in water and nutrient cycling caused by grazing can promote the spread of invasive species, which then degrade native bird habitats by altering fire and disturbance regimes (Rotenberry 1998). Sagebrush systems are particularly sensitive to grazing disturbance (Mack and Thompson 1982).

In the Bear Lake Section, one of the primary risk factors to maintaining viable sagebrush-steppe habitat is the fact that large tracts of sagebrush-steppe habitat are in private ownership, and thus may lack grazing plans and condition monitoring that help ensure best management practices are being used.

Objective	Strategy	Action(s)	Target SGCNs
Promote proper livestock grazing.	Develop, follow, and enforce grazing management plans.	Promote private landowners working with NRCS to develop grazing management plans for their private property. Monitor vegetation condition and adjust AUMs and grazing season as needed to meet standards.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
	Educate and incentivize landowners.	Promote best management practices for livestock grazing in sagebrush-steppe habitat. Explore opportunities to provide incentives to public land grazers and private landowners to use best management practices.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
Improve/increase native vegetation.	Use native seed and seedlings in habitat restoration projects.	Agency coordination on funding sources to support restoration projects. Collect local seed as sources for native plants to be used in restoration projects. Limit the use of nonnative plant species in restoration projects.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)

Infrastructure

Infrastructure such as roads, highways, high-voltage transmission lines, and cell phone towers (Governor's Executive Order No. 2015-04; Otter 2015) is identified as a primary threat (Otter 2012) and causes fragmentation and direct loss of shrubsteppe habitats (US Fish and Wildlife Service 2014). Power lines will present a collision risk to bird species and provide hunting perches for raptors and ravens; may have predation implications for species such as Sage-Grouse and Pygmy Rabbit.

A specific proposed project that presents threats to wildlife and wildlife habitat in the Bear Lake Section is the Gateway West Transmission Line Project (<http://www.gatewaywestproject.com/>). The project's approved route will run the transmission lines through sagebrush-steppe habitat on the Bear Lake Plateau.

Objective	Strategy	Action(s)	Target SGCNs
Reduce impacts of roads and energy transmission projects on wildlife and wildlife habitat.	Implement and enforce travel management plans.	Provide information on travel management through public outreach efforts, provide maps, both hard copies and options to obtain electronically, and maintain on the ground signage.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
	Coordinate development/ location and management of roads, power lines, pipelines, etc. to avoid important habitat areas and minimize the impact to wildlife.	Place roads and energy related infrastructure away from leks, riparian areas and other sensitive wildlife habitat. Place new roads, power lines, and infrastructure projects along existing corridors or within other altered habitats to the extent possible. Place seasonal closures on roads to protect wildlife during critical time periods, such as wintering, breeding, fawning/calving.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
Reduce bird power line strikes and electrocutions.	Work with power companies to implement practices and install apparatus to reduce collisions and electrocutions.	Keep records of bird power line collisions and electrocutions. Suggest monitor new power lines to document collision and electrocution concerns. Identify and map areas with power line collisions and electrocutions. Promote bury power lines in areas that experience high numbers of bird strikes.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle

Objective	Strategy	Action(s)	Target SGCNs
		Promote attaching bird diverters to make power lines more visible. Promote modifying power line structures to eliminate bird perch/roost sites.	
Reduce the impact of fences as barriers and collision risk for wildlife.	Maintain marked fences near Sage-Grouse leks, in order to increase visibility.	Identify fences near leks. Collaborate with partners to ensure fences are marked for visibility. Use volunteers where appropriate to help maintain marked fences.	Greater Sage-Grouse Sharp-tailed Grouse

Improper habitat treatment & restoration activities

Sagebrush treatments designed to reduce brush and increase grass to benefit grazing continues to be implemented in the Bear Lake Section. These treatments may include burning, herbicide treatment, and mechanical treatment. The fact that large tracts of sagebrush-steppe habitat are privately owned increases the threat of future sagebrush treatments that may impact habitat important to local Greater Sage-Grouse populations, as well as other sagebrush-obligate species. An additional related concern included the practice of using nonnative species for restoration or reseeded projects. Although nonnative species may provide a faster, cheaper alternative compared to native species when habitat has been disturbed or degraded, they typically do not provide equivalent benefits to wildlife species conservation.

Objective	Strategy	Action(s)	Target SGCNs
Improve/increase native vegetation.	Use native seed and seedlings in habitat restoration projects.	Agency coordination on funding sources to support restoration projects. Collect local seed as sources for native plants to be used in restoration projects. Limit the use of nonnative plant species in restoration projects.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)
Protect key habitat from loss and degradation.	Implement appropriate management of brush treatments.	Consider wildlife benefits and reduce impacts to wildlife on all public land (BLM, IDL) brush treatments. Conduct treatments using techniques that will not result in increases of invasive species.	Greater Sage-Grouse Sharp-tailed Grouse Ferruginous Hawk Golden Eagle Long-billed Curlew Short-eared Owl Common Nighthawk Sage Thrasher Pygmy Rabbit

Objective	Strategy	Action(s)	Target SGCNs
		Provide, where possible, input on private land brush treatments.	Townsend's Big-eared Bat Western Small-footed Myotis Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)

Species designation, planning & monitoring

In addition to the conservation actions to address specific threats, some species require inventory and monitoring to assess their status and distribution in Idaho. Population monitoring and surveys to determine distribution are needed for several species in the Bear Lake Section.

Objective	Strategy	Action(s)	Target SGCNs
Improve our knowledge of wildlife populations and distribution using the sagebrush-steppe habitat target.	Conduct surveys to monitor species populations.	In collaboration with land management agency partners and private landowners, conduct long-term monitoring surveys at established intervals to document population (as well as distribution) changes. Use volunteers, master naturalists, and citizen scientists to the extent possible.	Greater Sage-Grouse Ferruginous Hawk Golden Eagle Pygmy Rabbit
	Conduct surveys to document species presence, distribution, and abundance.	In collaboration with land management agency partners and private landowners, conduct surveys to document species presence, distribution, and abundance. Use volunteers, master naturalists, and citizen scientists to the extent possible.	Short-eared Owl Common Nighthawk Sagebrush Sparrow Lyrate Mountainsnail A Tiger Beetle (<i>Cicindela decomnotata montevolans</i>)

Target: Riverine–Riparian Forest & Shrubland

In the Bear Lake Section, the Riverine–Riparian Forest & Shrubland habitat target encompasses rivers and streams, including aquatic habitat and their associated terrestrial riparian and wetland habitats. This target includes Bear River and its tributaries and the tributaries to Bear Lake. Riparian habitat is the second most abundant habitat type in the Bear Lake Section and accounts for approximately 20% of the vegetation land cover type. Riparian habitat is diverse and includes a variety of grasses, forbs, and woody species such as willow spp., red osier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*), and narrowleaf (*Populus angustifolia*) cottonwood associated with the Bear River and small streams. Scattered cottonwoods are found associated with the Bear River in the Dingle area and upstream to the Pegram Creek area. The Riverine–Riparian Forest & Shrubland habitat target also includes wet meadows and wetlands influenced by the river and stream flooding and overflow as well as overland runoff for adjacent uplands as streams and precipitation. This habitat type provides important habitat for a number of SGCN including, breeding areas northern leopard frog and western toad, winter foraging and resting habitat for Trumpeter Swans, foraging habitat for White-faced Ibis and Sandhill Crane, and foraging and roosting habitat for bat species.

Target Viability

Fair. Riverine systems in the Bear Lake Section are affected by water diversions for crop and pasture irrigation. As a result there are negative impacts associated with altered hydrograph, water quality, water quantity, and loss of riparian habitat. The Bear River riparian habitat has been eliminated, reduced, and only in fair condition in many stretches. The diversion of water from Bear River into Bear Lake for irrigation storage purposes has altered the hydrograph of the Bear River flood plain, reducing the viability of the riparian, wet meadow, and riverine wetland habitats. Riverine habitat associated with smaller tributaries is affected



Bear River, IDFG

by reduced water flows due to water diversions. Wetlands associated with riverine habitat are also affected by water removal through the spring and summer that results in lower than normal flows. The lack of floodplain connectivity to the stream channel affects this habitat target. These conditions affect the capability of this target to support SGCN as diverse as breeding northern leopard frog, wintering Trumpeter Swan, and foraging and roosting bat species. In addition, the wet meadows are often cut for hay and used for livestock grazing, practices that may reduce benefits as nesting and foraging habitat for associated bird species.

Prioritized Threats and Strategies for Riverine–Riparian Forest & Shrubland

High rated threats to Riverine–Riparian Forest & Shrubland in the Bear Lake Section

Improper livestock grazing management

Livestock grazing can affect wildlife habitat in many ways (Krausman et al. 2009). For example, livestock grazing can change habitat features that directly influence birds by reducing plant species diversity and biomass (Reynolds and Trost 1981, Bock and Webb 1984, Saab et al. 1995). Alternatively, changes in water and nutrient cycling caused by grazing can promote the spread of invasive species, which then degrade native bird habitats by altering fire and disturbance regimes (Rotenberry 1998).

In the Bear Lake Section, one of the primary factors that contribute to this problem is the fact that riverine habitat is in private ownership, and may lack grazing plans and condition monitoring.

Objective	Strategy	Action(s)	Target SGCNs
Promote proper livestock grazing.	Develop grazing management plans.	Promote private landowners working with NRCS to develop grazing management plans for their private property. Monitor vegetation condition and adjust AUMs and grazing season as needed to meet standards.	Western Toad Northern Leopard Frog Sandhill Crane Long-billed Curlew Townsend's big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly
	Educate and incentivize landowners.	Promote best management practices for livestock use of riparian habitats. Explore opportunities to provide incentives to public land grazers and private landowners to use best management practices.	Western Toad Northern Leopard Frog Sandhill Crane Hoary Bat Townsend's Big-eared Bat Silver-haired Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly
Protect and improve riparian habitat.	Develop off-site watering areas and/or gaps to reduce impacts to springs, wetlands, and riparian areas.	Work with land management agencies to identify opportunities to develop off-site watering, particularly along the Bear River and in the Pegram Creek drainage of the Bear Lake Plateau. Where possible work with landowners to develop off-site watering on private property, particularly along the Bear River and in the Pegram Creek drainage of the Bear Lake Plateau, and provide assistance when appropriate and possible. Including providing technical support and identifying possible funding sources.	Western Toad Northern Leopard Frog Sandhill Crane Townsend's Big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly
	Install livestock exclusion fencing	Work with land management agencies to identify	Western Toad Northern Leopard Frog

Objective	Strategy	Action(s)	Target SGCNs
	to protect riparian areas.	<p>opportunities to fence riparian areas to better manage grazing effects, particularly along the Bear River and in the Pegram Creek drainage of the Bear Lake Plateau.</p> <p>Where possible work with landowners to use riparian fencing to better manage grazing effects on private property, particularly along the Bear River and in the Pegram Creek drainage of the Bear Lake Plateau, and provide assistance when appropriate and possible. Including providing technical support and identifying possible funding sources.</p>	<p>Sandhill Crane Townsend's Big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly</p>

Water management altering hydrograph

The diversion of water for crop and pasture irrigation affects the riverine hydrograph as well as water quality, water quantity, and has resulted in the loss and degradation of riparian habitat. The altered hydrography of the Bear River flood plain, caused by lower than normal flows in the spring and summer, reduces the viability of the riparian, wet meadow, and riverine wetland habitats. The altered hydrograph has resulted in the loss or decline of connectivity within riverine systems and between riverine and floodplain habitat. The diversion of water from streams in the spring results in lower than normal flows, rather than allowing for more natural high water runoff flows that connects and recharges the floodplain.

Objective	Strategy	Action(s)	Target SGCNs
Reduce water use to maintain a more natural hydrograph.	Enroll/maintain acreage in CRP/SAFE and other land conservation programs.	Encourage landowners to work with NRCS to use wildlife conservation practices on private range and agricultural lands.	<p>Western Toad Northern Leopard Frog Trumpeter Swan White-faced Ibis Sandhill Crane Townsend's Big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly</p>
	Water use does not exceed water right allocation.	<p>Work with irrigation companies to ensure water use is appropriately allotted.</p> <p>Promote the use of improved</p>	<p>Western Toad Northern Leopard Frog Trumpeter Swan White-faced Ibis Sandhill Crane</p>

Objective	Strategy	Action(s)	Target SGCNs
		equipment for accurate cfs measurement.	Townsend's Big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly
Maintain/improve habitat connectivity within riverine systems and between riverine and floodplain habitat.	Limit water use during spring run-off and maintain minimum flows year around.	Work with private landowners and irrigation companies to identify opportunities for water efficacies. Work with partners to establish a minimum flow on Bear River and its tributaries and Bear Lake tributaries.	Western Toad Northern Leopard Frog Trumpeter Swan Townsend's Big-eared Bat Silver-haired Bat Hoary Bat Western Small-footed Myotis Little Brown Myotis California Floater Pondsnail (<i>Stagnicola</i>) Species Group Rotund Physa Rocky Mountain Dusksnail Bear Lake Springsnail Utah Sallfly

Infrastructure

Infrastructure such as roads, highways, high-voltage transmission lines, pipelines, towers, and fences can present a threat to many wildlife species. Existing infrastructure causes fragmentation as well as loss of habitat that affects many wildlife species. Roads not only fragment habitat, they are also a source of direct mortality for wildlife species. Power lines will present a collision risk to bird species and provide hunting perches for raptors and ravens; may have predation implications for other species. Collision risk is a particular threat for Trumpeter Swan and Sandhill Crane using riverine habitat in the Bear Lake Section.

A specific proposed project that presents threats to wildlife and wildlife habitat in the Bear Lake Section is the Gateway West Transmission Line Project (<http://www.gatewaywestproject.com/>). The project's approved route will run the transmission lines through riverine habitat, including Bear River crossings.

Objective	Strategy	Action(s)	Target SGCNs
Reduce impacts of roads and energy transmission projects on wildlife and wildlife habitat.	Coordinate development/location and management of roads, power lines, pipelines, etc. to avoid important habitat areas and	Place roads and energy related infrastructure away from riparian areas and other sensitive wildlife habitat. Place new roads, power lines, and infrastructure projects along existing corridors or within other altered habitats to the extent possible.	Trumpeter Swan Sandhill Crane

Objective	Strategy	Action(s)	Target SGCNs
	minimize the impact to wildlife.	Place seasonal closures on roads to protect wildlife during critical time periods, such as wintering, breeding, fawning/calving.	
Reduce bird power line strikes and electrocutions.	Work with power companies to implement practices and install apparatus to reduce collisions and electrocutions.	<p>Keep records of bird power line collisions and electrocutions.</p> <p>Monitor new power lines to document collision and electrocution concerns.</p> <p>Identify and map areas with power line collisions and electrocutions.</p> <p>Bury power lines in areas that experience bird strikes.</p> <p>Attach bird diverters to make power lines more visible.</p> <p>Modify power line structures to eliminate bird perch/roosting sites.</p>	Trumpeter Swan Sandhill Crane

Species designation, planning & monitoring

In addition to the conservation actions to address specific threats, some species require inventory and monitoring to assess their status and distribution in Idaho. Population monitoring and surveys to determine distribution are needed for several species in the Bear Lake Section.

Objective	Strategy	Action(s)	Target SGCNs
Improve our knowledge of wildlife populations and distribution using the riverine habitat target.	Conduct surveys to monitor species populations.	<p>In collaboration with land management agency partners and private landowners, conduct long-term monitoring surveys at established intervals to document population (as well as distribution) changes.</p> <p>Use volunteers, master naturalists, and citizen scientists to the extent possible.</p>	Northern Leopard Frog
	Conduct surveys to document species presence, distribution, and abundance.	<p>In collaboration with land management agency partners and private landowners, conduct surveys to document species presence, distribution and abundance.</p> <p>Use volunteers, master naturalists, and citizen scientists to the extent possible.</p>	<p>Western Toad</p> <p>Long-billed Curlew</p> <p>California Floater</p> <p>Pondsnail (<i>Stagnicola</i>) Species Group</p> <p>Rotund Physa</p> <p>Rocky Mountain</p> <p>Duskysnail</p> <p>Bear Lake Springsnail</p> <p>Utah Sallfly</p>

Target: Depressional Wetlands

Depressional Wetlands account for approximately 7% of the vegetation land cover type in the Bear Lake Section. The importance of this habitat type in the Bear Lake Section is emphasized by the fact that wetlands are scarce in the Intermountain West due to the arid climate of the region (Ratti and Kadlec 1992), and account for about 1% of the surface area in the Intermountain West (Dahl 1990). The Bear Lake Section wetlands are influenced by snowmelt and rain, and range from infrequent to semipermanent or permanently flooded. In the Bear Lake Section, the target includes primarily shallow water and deep water marshes associated with the Bear Lake NWR. The target also includes wetlands associated with old oxbows and meanders of the Bear River. On the Bear Lake NWR this target provides important nesting habitat for several SGCN bird species, including Trumpeter Swan and American Bittern and colony nesting species such as White-faced Ibis, Caspian Tern, Franklin's Gull, Clark's Grebe, and Western Grebe. This target also provides habitat for Northern Leopard Frog and Western Toad.

Target Viability

Fair. Depressional wetland habitat is generally only in fair condition in the Bear Lake Section, due to impacts of water management and altered hydrologic regimes. The diversion of water from



Trumpeter Swans, Bear Lake NWR, IDFG

Bear River into the Bear Lake for irrigation storage purposes has altered the hydrology and natural process of large tracts of wetland habitat located at the north end of Bear Lake, much of which is encompassed in the Bear Lake NWR. The abundance of wetlands in western states has been reduced 30–91% between the 1780s and mid-1980s, with an estimated loss of 57% of historic wetlands in the Intermountain West (Dahl 1990, Ratti and Kadlec 1992). Although the rate of wetland loss nationally has slowed over time, the loss of freshwater emergent marsh habitat has continued (Dahl

2006, Copeland et al. 2010). The Bear lake watershed wetlands, now mostly comprised of Bear Lake NWR, have declined from a pre-1900 core-marsh base of 30-35,000 acres to present day core-marsh base of 17,000 acres (FWS 2013).

Spotlight Species of Greatest Conservation Need: American Bittern

American Bittern is found seasonally in Idaho, breeding in several locations, including managed wetlands associated with State Wildlife Management Areas and National Wildlife Refuges.

Nesting habitat chiefly includes freshwater wetlands with tall, emergent vegetation, primarily bulrush and cattail, and rarely dense upland vegetation surrounding wetland habitat.

Most nests have been found placed over water that is 5–20 cm deep, in dense emergent vegetation, using surrounding vegetation to construct a platform. Breeding Bird Survey data indicate long-term (1966–2013) population declines in the United States and Western BBS Region of –1.5% and –3.4% per year, respectively. BBS data also indicate both long-term (1966–2013) and short-term (2003–2013) declines in Idaho of greater than –15% per year; however, these trends



American Bittern, IDFG

are based upon extremely small sample sizes and should be interpreted cautiously. Surveys conducted throughout Idaho in 2005–2007 indicated that Bear Lake NWR supported the densest population of American Bitterns in the state (IDFG unpublished data). There is concern at Bear Lake NWR that the once dense population of bitterns, as documented by these surveys, has declined dramatically in recent years. Loss of suitable wetland habitat is of primary concern for American Bitterns, and managing these wetlands for the structural characteristics needed by American Bittern can be a challenge. For example, some sites may need burning to open decadent stands of bulrush and cattail, which can be logistically and financially difficult to accomplish. Impacts of climate change, particularly from drought, are also of concern for this species. Declines in the US may indicate a northern population shift, in part because of habitat destruction and drought at the southern extent of this species' range.

Prioritized Threats and Strategies for Depressional Wetlands

High rated threats to Depressional Wetlands in the Bear Lake Section

Mining

This threat specifically refers to the Paris Hills Mine, an underground phosphate mine located near Paris, Idaho. The mine and supporting infrastructure will affect upland sagebrush-steppe habitat; however, the higher concern at this point in the project is that ground water will accumulate in the mine and will need to be pumped from the mine back into the ground. This process may affect wetlands in the valley floor. Anticipated contaminate levels in the waste water are unknown, as are potential negative impacts to wetland habitat and associated wildlife species.

Objective	Strategy	Action(s)	Target SGCNs
Reduce potential effects from mining waste water to wetland habitat and associated fish and wildlife species.	Work with mining company to reduce effects to fish and wildlife and key habitats.	Gain a better understanding of the level and types of contaminants in the waste water and the potential effects on wetland habitat and wildlife from contaminants. Explore alternative techniques to dispose of waste water in order to reduce negative effects.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern

Invasive aquatic plants & invertebrates

There is an increasing threat to wetland habitat from invasive aquatic plants and invertebrates. This threat includes plants such as purple loosestrife (*Lythrum salicaria*) and phragmites (*Phragmites australis*) and invertebrates such as quagga mussel (*Dreissena bugensis*) and zebra mussel (*Dreissena polymorpha*). These invasive species are transported into areas by boats, vehicles, and on boots and clothing. Once in an area they are easily dispersed in the aquatic system and difficult to control.

Objective	Strategy	Action(s)	Target SGCNs
Reduce the risk of invasive species infestations.	Continue/expand monitoring/control of invasive species.	Explore opportunities for additional funds for increased resources and personnel if needed. Use volunteers and citizen scientists to detect and control invasive species.	Western Toad Northern Leopard Frog Trumpeter Swan Sandhill Crane California Gull Caspian Tern
	Use boat wash stations.	Continue the current Idaho Department of Agriculture program administered at key points. Ensure that boaters using Bear Lake are checked and have access to a boat wash station.	Western Toad Northern Leopard Frog Trumpeter Swan Sandhill Crane California Gull Caspian Tern
	Educate the public on detection and control of invasive species.	Collaboration between resource management agencies and conservation NGOs to develop education materials for public land users and private landowners. These materials should include identification information as well as control measures. Develop an outreach program to distribute materials and provide technical support.	Western Toad Northern Leopard Frog Trumpeter Swan Sandhill Crane California Gull Caspian Tern

Dam management/water storage

Dams that control the flow of water through the Bear Lake NWR marsh for irrigation storage impact the wetlands. The Bear Lake National Wildlife Refuge and Oxford Slough Waterfowl Production Area Comprehensive Conservation Plan states water level management is the

overriding factor affecting habitat management strategies for wildlife, particularly nesting birds on the Bear Lake NWR (FWS 2013). The document further summarizes the following alterations and impacts. Alterations: (1) The Bear River now flows into Bear Lake; (2) Bear Lake and Bear Lake NWR marsh have been separated and now serve as irrigation function; (3) Water control structures are used to regulate water levels. Impacts: (1) The marsh now functions as a turbid, brought-flow system as opposed to the historic freshwater discharge system; (2) Sediment deposition occurs at a greater frequency; (3) Excessive turbidity decreases plant germination and growth; (4) Natural spring high water runoff has been replaced with water levels that are regulated annually, rather than seasonally, for storage of spring runoff and release of stored water in summer; (5) Absence of drought has led to less frequency of disturbance (e.g., fire), which has resulted in more homogenous emergent plant communities.

Objective	Strategy	Action(s)	Target SGCNs
Maintain/protect or restore natural wetlands to mimic historic function and value.	Work with private landowners and land managers to identify opportunities to restore, enhance, preserve, and protect wetlands.	Work with partners to secure adequate water supplies for managed wetlands and terminal basins to conserve their ecological integrity and functional values. Work with partners, such as Ducks Unlimited, to identify areas historically classified as natural wetlands and have hydrologic potential for restoration.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern
Reduce water usage to ensure appropriate water levels in Bear Lake, Bear River, and associated wetlands.	Enroll/maintain acreage in CRP/SAFE and other land conservation programs.	Encourage landowners to work with NRCS to use wildlife conservation practices on private range and agricultural lands.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern
	Ensure that water use does not exceed water right allocation.	Work with irrigation companies to ensure water use is appropriately allotted. Promote the use of improved equipment for accurate cfs measurement.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern
Increase island nesting habitat availability.	Work with land and water managers to identify opportunities to	Work with water managers to develop and implement water level management guidelines during the breeding season that balance irrigation and wildlife needs.	California Gull Caspian Tern

Objective	Strategy	Action(s)	Target SGCNs
	improve/enhance island nesting habitat.	Work with land managers, such as FWS, to create new nesting locations that will not be subject to water level concerns in the foreseeable future.	

Water management altering hydrograph

The diversion of water for crop and pasture irrigation affects the riverine hydrograph as well as water quality, water quantity, and has resulted in the loss and degradation of riparian habitat. The altered hydrography of the Bear River flood plain, caused by lower than normal flows in the spring and summer, reduces the viability of Depressional Wetlands. The altered hydrograph has resulted in the loss or decline of connectivity within riverine systems and between riverine and floodplain habitat. The diversion of water from streams in the spring results in lower than normal flows, rather than allowing for more natural high water runoff flows that connects and recharges the floodplain.

Objective	Strategy	Action(s)	Target SGCNs
Reduce water use to maintain a more natural hydrograph.	Enroll/maintain acreage in CRP/SAFE and other land conservation programs.	Encourage landowners to work with NRCS to use wildlife conservation practices on private range and agricultural lands.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern
	Water use does not exceed water right allocation.	Work with irrigation companies to ensure water use is appropriately allotted. Promote the use of improved equipment for accurate cfs measurement.	Western Toad Northern Leopard Frog Trumpeter Swan Western Grebe Clark's Grebe American Bittern White-faced Ibis Sandhill Crane Franklin's Gull California Gull Caspian Tern Black Tern

Infrastructure

Infrastructure such as roads, highways, high-voltage transmission lines, pipelines, towers, and fences can present a threat to many wildlife species. Existing infrastructure causes fragmentation, as well as loss of habitat that affects many wildlife species. Roads not only fragment habitat, they also are a source of direct mortality for wildlife species. Power lines will present a collision risk to bird species and provide hunting perches for raptors and ravens; may have predation implications for other species. Collision risk is a particular threat for Trumpeter Swan and Sandhill Crane using wetland habitat in the Bear Lake Section.

Objective	Strategy	Action(s)	Target SGCNs
Reduce bird power line strikes and electrocutions.	Work with power companies to implement practices and install apparatus to reduce collisions and electrocutions.	<p>Keep records of bird power line collisions and electrocutions.</p> <p>Monitor new power lines to document collision and electrocution concerns.</p> <p>Identify and map areas with power line collisions and electrocutions.</p> <p>Bury power lines in areas that experience bird strikes.</p> <p>Attach bird diverters to make power lines more visible.</p> <p>Modify power line structures to eliminate bird perch/roosting sites.</p>	Trumpeter Swan Sandhill Crane

Species designation, planning & monitoring

In addition to the conservation actions to address specific threats, some species require inventory and monitoring to assess their status and distribution in Idaho. Population monitoring and surveys to determine distribution are needed for several species in the Bear Lake Section.

Objective	Strategy	Action(s)	Target SGCNs
Improve our knowledge of wetland dependent wildlife populations and distribution.	Conduct surveys to monitor species populations.	<p>In collaboration with land management agency partners and private landowners, conduct long-term monitoring surveys at established intervals to document population (as well as distribution) changes.</p> <p>Use volunteers, master naturalists, and citizen scientists to the extent possible.</p>	Northern Leopard Frog Trumpeter Swan American Bittern White-faced Ibis Franklin's Gull California Gull Caspian Tern
	Conduct surveys to document species presence, distribution, and abundance.	<p>In collaboration with land management agency partners and private landowners, conduct surveys to document species presence, distribution, and abundance.</p> <p>Use volunteers, master naturalists, and citizen scientists to the extent possible.</p>	Western Toad Western Grebe Clark's Grebe Black Tern

Target: Bear Lake Endemic Fish

Bear Lake contains a unique fish fauna that includes 4 endemic species: Bear Lake Whitefish, Bonneville Cisco, Bonneville Whitefish, and Bear Lake Sculpin. The Bonneville Whitefish and Bonneville Cisco provide a unique recreational opportunity on the lake. Bonneville Cutthroat Trout is present in both Bear Lake and Bear River and represent an important conservation and recreation species for the Bear Lake Section. Also present in Bear Lake are nonnative Lake Trout, Rainbow Trout, Brook Trout, Brown Trout, and Yellow Perch (*Perca flavescens*). These species provide important recreational value. Native Utah sucker (*Catostomus ardens*) and Utah chub (*Gila atraria*) are also present in the Lake. Common Carp (*Cyprinus carpio*) are present in the Bear Lake and associated wetland complex



Bear Lake Sculpin, IDFG

(Mud Lake) north of the Lake included in Bear Lake NWR. Carp present a conservation threat to the maintenance of quality aquatic habitat in Bear Lake, the wetland complex north of the lake, and Bear River.

Target Viability

Good. Because Bear Lake spans both Idaho and Utah, fisheries resources in the lake are managed collaboratively by the 2 states through the implementation of the Bear Lake Fisheries Management Plan (Tolentino and Teuscher 2010). The Bear Lake Management Plan includes population objectives for endemic fish species. Endemic fish populations are monitored to ensure these population targets are being met. Lake Trout are a predatory species that may present a risk to the populations of endemic fish and other native fish species present in Bear Lake. As such, the Bear Lake Management Plan calls for adjusting Lake Trout stocking if endemic fish populations targets are not met. Nonnative recreational fish present and stocked in Bear Lake are managed to ensure the persistence of viable populations of native fish species. The implicit assumption is that if the populations of endemic fish are healthy, the entire lake ecosystem will be conserved.

Prioritized Threats and Strategies for Bear Lake Endemic Fish

High rated threats to Bear Lake Endemic Fish in the Bear Lake Section

Dam management/water storage

Water is now diverted from the Bear River into Bear Lake to store for annual irrigation needs. The current use of Bear Lake as an irrigation water storage facility results in fluctuating water levels

that do not mimic the natural seasonal changes in the Lake's water elevations. Shoreline cobble provides spawning habitat for endemic fish species. Impacts to productions may occur if Bear Lake's water level recedes below areas with spawning cobble due to the drawdown for irrigation purposes.

Objective	Strategy	Action(s)	Target SGCNs
Reduce water usage to help maintain water levels above spawning areas in Bear Lake.	Enroll/maintain acreage in CRP/SAFE and other land conservation programs.	Encourage landowners to work with NRCS to use wildlife conservation practices on private range and agricultural lands.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Water use does not exceed water right allocation.	Work with irrigation companies to ensure water use is appropriately allotted. Promote the use of improved equipment for accurate cfs measurement.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Improve irrigation practices and equipment for more efficient use.	Convert from flood irrigation to sprinkler irrigation.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
Improve spawning habitat.	Maintain appropriate water levels to provide adequate spawning habitat.	Work with water users and water management entities to maintain appropriate water levels.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin

Invasive aquatic plants & invertebrates

There is an increasing threat to wetland habitat from invasive aquatic plants and invertebrates. This threat includes plants such as purple loosestrife and phragmites and invertebrates such as Quagga Mussel and Zebra Mussel. These invasive species are transported into areas by boats, vehicles, and on boots and clothing. Once in an area they are easily dispersed in the aquatic system and difficult to control.

Objective	Strategy	Action(s)	Target SGCNs
Reduce the risk of invasive species infestations.	Continue/expand monitoring/control of invasive species.	Explore opportunities for additional funds for increased resources and personnel if needed. Explore the use of volunteers and citizen scientists to detect and control invasive species.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Use boat wash stations.	Continue the current Idaho Department of Agriculture program administered at key points. Ensure that boaters using Bear Lake are checked and have access to a boat wash station.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Educate the public on detection and	Collaboration between resource management agencies and conservation NGOs to develop	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish

Objective	Strategy	Action(s)	Target SGCNs
	control of invasive species.	education materials for public land users and private landowners. These materials should include identification information as well as control measures. Develop an outreach program to distribute materials and provide technical support.	Bear Lake Sculpin

Medium rated threats to Bear Lake Endemic Fish in the Bear Lake Section

Predation & competition with introduced fish

Current stock rates and population levels of nonnative fish are not a high conservation concern to endemic fish populations. However, monitoring fish populations and species composition in Bear Lake will continue to be important to detect changes in population status. If changes are detected, the Bear Lake Fisheries Management Plan (Tolentino and Teuscher 2010) provides guidance.

Objective	Strategy	Action(s)	Target SGCNs
Reduce the risk of nonnative fish to impact endemic fish populations.	State agencies will maintain nonnative fish populations at levels that allow for sustaining viable populations of native fish.	Agencies will adjust stock rates of nonnative fish if endemic populations fall below target objectives.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Enforce regulations regarding the unauthorized stocking of fish.	Use public outreach to educate on the potential negative impacts to endemic fish. Use enforcement actions as necessary.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin
	Monitor for presence of undesirable species.	Continue current program to monitor Bear Lake for species composition.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin

Species designation, planning & monitoring

Objective	Strategy	Action(s)	Target SGCNs
Improve our knowledge of endemic fish populations in Bear Lake.	Maintain long-term monitoring of endemic fish populations.	In collaboration with Utah Division of Wildlife Resources conduct long-term monitoring surveys at established intervals to document population changes.	Bear Lake Whitefish Bonneville Cisco Bonneville Whitefish Bear Lake Sculpin

Target: Movement Corridor

An important wildlife movement corridor exists that links big game summer habitats north of the Bear Lake Plateau with winter range on the Plateau. The fall–winter movement through the corridor is generally southward from the Caribou–Targhee National Forest through the Sheep Creek Hills across US Highway 30, the Union Pacific Railroad tracks, and the Bear River. In the spring, deer move northward from the Bear Lake Plateau to their summer range. The most concentrated movement is through an area referred to as Rocky Point. Mule Deer mortality as they move through this corridor, due to vehicle collisions, is linked to Golden and Bald Eagle mortality resulting from vehicle collisions as well. This movement corridor may also provide a dispersal corridor for wolverine (IDFG 2014).

Target Viability

Fair. US Highway 30 and Union Pacific Railroad bisect the wildlife movement corridor. The highway is used extensively by commercial semitrucks as a shortcut between Interstates 15 and 80. An estimated 3,000 Mule Deer move through this corridor to winter on the Bear Lake Plateau. Mule deer–vehicle collisions are common between Montpelier and the Wyoming border, particularly during the fall and spring migration as well as during winter months. Mule Deer mortalities provide scavenging opportunities for Bald and Golden Eagles leading to eagle–vehicle collisions and subsequent eagle mortalities.

Prioritized Threats and Strategies for the Movement Corridor

Medium rated threat to the Movement Corridor in the Bear Lake Section

Vehicle collisions

The Bear Lake Section appears to be a relatively important wintering area for Golden Eagles and Bald Eagles, based on general observations as well as Mid-Winter Bald Eagle Survey data. The average number of Golden Eagles observed during midwinter surveys 1980-2010 was six and ranged from 0–16 <http://sdfs.wr.usgs.gov/wintergoea/>. The average number of Bald Eagles observed during midwinter surveys 1986-2012 was 7 and ranged from 1–16 <http://gis.nacse.org/eagles/routes.php>. IDFG has begun placing greater emphasis on documenting and reporting wildlife roadkill in recent years and the data shows that between 2010 and 2014, 10 Golden Eagle and 7 Bald Eagle mortalities were reported from vehicle collisions on Hwy 30 between Montpelier and the Wyoming Border, with the highest concentration in or near the area referred to as Rocky Point <https://idfg.idaho.gov/species/roadkill/list>.

Objective	Strategy	Action(s)	Target SGCNs
Protect important movement habitat.	Protect connectivity habitat from development to ensure corridor remains intact and to ensure right of way for possible fencing	Obtain Conservation easements for private property with NGO or Agency. Retain BLM and IDL parcels in public ownership.	Wolverine Golden Eagle

Objective	Strategy	Action(s)	Target SGCNs
	and over/under passes.		
Reduce vehicle/wildlife collisions.	Implement animal detection and warning signs	Work with ITD to test animal detection equipment that is linked to warning signs. Work with ITD to install appropriate 'wildlife on roadway' warning signs, such as permanent signs and portable digital reader board signs.	Wolverine Golden Eagle
	Remove wildlife, particularly deer carcasses, from the road sides.	Collaborate with ITD personnel to keep road way clear of carcasses, particularly in the winter.	Wolverine Golden Eagle
	Install wildlife exclusion fencing and associated under/over passes.	Work with ITD to develop a long-range plan for wildlife exclusion fencing with under or over passes for wildlife in the Rocky Point area of US Highway 30. Work with ITD, FWS, and other entities to identify sources and secure funding for wildlife exclusion fencing and under or over passage for wildlife.	Wolverine Golden Eagle

Species designation, planning & monitoring

Roadkills, including Golden Eagle mortalities due to vehicle collisions, should be recorded in the IDFG roadkill database. IDFG and ITD should collaborate to document all roadkills, including Golden Eagle.

Objective	Strategy	Action(s)	Target SGCNs
Identify high risk areas for eagle/vehicle collisions.	Maintain records of eagle mortalities from vehicle collisions.	Coordination between IDFG and ITD to report eagle mortalities on IDFG roadkill reporting system on website.	Golden Eagle

Target: Pollinators

Pollinators provide important ecosystem functions to natural systems in the Bear Lake Section. In addition, pollinators provide an essential ecosystem service that benefits agricultural producers, agricultural consumers, and gardeners (Mader et al. 2011). Two butterflies (Kriemhild Fritillary and Monarch) and 4 bees (Western Bumble Bee, Suckley's Cuckoo Bumble Bee, Hunt's Bumble Bee, and Morrison's Bumble Bee) comprise the group of 6 SGCN pollinators that are known to occur within this section. However, little is known about species distribution and population status.

Target Viability

The viability of this target is not well understood in the Bear Lake Section. However, many pollinators, but particularly bees, are known to be experiencing population declines throughout North America (Mader et al. 2011), and those declines may be occurring within the Bear Lake Section as well. Population declines and local die-offs occur for a variety of reasons including habitat loss, pesticide exposure, and climate change (Mader et al. 2011). Farmers, habitat managers, roadway authorities, municipalities, and homeowners can all contribute to pollinator conservation.

Prioritized Threats and Strategies for Pollinators

High rated threats to Pollinators in the Bear Lake Section

Habitat loss & degradation

Pollinators require foraging and nesting habitat. Providing both types of habitat within close proximity to each other is the best way to ensure pollinator success. Educating land managers about techniques to reduce land management impacts to pollinators is an essential component to pollinator habitat management. Protecting, enhancing, and creating pollinator habitat can provide a positive way to engage with local communities.

Objective	Strategy	Action(s)	Target SGCNs
Reduce impact of land management practices on pollinators.	Educate about and implement practices that benefit pollinators.	<p>Promote the reduction of grazing impacts by limiting grazing to one third to one fourth of management areas per season (Mader et al. 2011).</p> <p>Promote the implementation of pollinator beneficial mowing techniques including use of flushing bar, cutting at ≤ 8 mph, maintaining a high minimum cutting height of ≥ 12–16 inches, mowing only in daylight hours, and mow in a mosaic instead of an entire site (Mader et al. 2011).</p> <p>Where prescribed fire is used, promote the implementation of pollinator friendly burning protocols including rotational burning of $\leq 30\%$ of each site every few years, leave small unburned patches intact, avoid burning too frequently (no more than every 5–10 years), avoid high intensity fires unless the burn goal is tree removal.</p> <p>Work with ITD to implement proper roadside pollinator habitat management.</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch
	Conserve existing pollinator habitat.	<p>Conduct surveys for native milkweed. Initiate seed saving program.</p> <p>Map existing major known pollinator habitat.</p> <p>Identify and recognize landowners providing pollinator habitat and provide habitat management educational opportunity.</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch
Create new urban and rural pollinator habitat.	Develop programs to encourage urban landowners to create pollinator habitat.	<p>Provide pollinator habitat workshops and educational materials for homeowners and rural land owners.</p> <p>Explore ways to provide an incentive program for homeowners to create pollinator habitat.</p> <p>Work with municipalities and businesses to create urban pollinator habitat.</p> <p>Promote the use of and provide bee nest boxes.</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch

Pesticides

Pollinators are negatively affected by pesticides by absorbing pesticides through the exoskeleton, drinking nectar containing pesticides, and carrying pollen laced with pesticides back to colonies (Mader et al. 2011). Neonicotinoids are particularly harmful to bee populations and can cause dramatic die-offs (Hopwood et al. 2012). Although the most effective strategy for benefitting pollinators is to eliminate pesticide use, significant benefit for pollinators can still be achieved through reducing use of and pollinator exposure to pesticides (Mader et al. 2011).

Objective	Strategy	Action(s)	Target SGCNs
Reduce native pollinator exposure to pesticides.	Educate habitat managers, farmers, municipalities, and small property owners in methods to reduce or eliminate pesticide use.	<p>Collaborate with partners to develop and distribute educational materials, including the use of workshops and seminars that encourage the elimination and reduction of pesticide use where practical.</p> <p>As well as provide techniques to do so, such as, apply the minimum amount of chemical necessary and apply when pollinators are least active (i.e., nighttime and when flowers are not blooming) (Mader et al. 2011).</p> <p>Specifically target urban homeowners in educational efforts in the elimination of or proper application of pesticides.</p> <p>Conduct workshops that discuss pesticides in relation to other pollinator habitat management concerns.</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch
	Eliminate use of neonicotinoid insecticides (Hopwood et al. 2012).	<p>Develop and distribute educational material on the detrimental effects of neonicotinoids on bees (Hopwood et al. 2012). Distribute to municipalities, counties, agriculture producers, habitat managers, and other property owners.</p> <p>Do not employ the use of neonicotinoids on IDFG administered lands (Hopwood et al. 2012).</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch
	Reduce native pollinator exposure to pesticides on IDFG administered property.	<p>Use the minimum recommended amount of pesticide.</p> <p>Apply pesticides at times when pollinators are least active such as nighttime, cool periods, low wind activity, and when flowers are not blooming.</p> <p>Mow or otherwise remove flowering weeds before applying pesticides.</p>	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch

Species designation, planning & monitoring

In addition to the conservation actions to address specific threats, some species require inventory and monitoring to assess their status and distribution in Idaho. Having a better understanding of species distribution and population status will enhance the effectiveness of other conservation strategies and actions. Population monitoring and surveys to determine distribution are needed for the SGCN pollinator species in the Bear Lake Section.

Objective	Strategy	Action(s)	Target SGCNs
Improve our knowledge of pollinator populations and distribution.	Conduct surveys to document species presence, distribution, and population status.	Conduct surveys to determine species breeding sites and colonies. Establish long-term monitoring programs. Use volunteers, master naturalists, and citizen scientists to assist with surveys and monitoring.	Hunt's Bumble Bee Morrison's Bumble Bee Western Bumble Bee Suckley's Cuckoo Bumble Bee Kriemhild Fritillary Monarch

Bear Lake Section Team

An initial version of the Bear Lake Section project plan was completed for the 2005 Idaho State Wildlife Action Plan (formerly Comprehensive Wildlife Conservation Strategy). A small working group developed an initial draft of the Section Plan (Miradi v. 0.4), which was then reviewed by a wider group of partners and stakeholders during a 2-day workshop held at the Idaho Department of Fish and Game Pocatello office, Idaho in August 2014 (this input was captured in Miradi v. 0.5). That draft was then subsequently distributed for additional stakeholder input including a 1-day meeting in November 2014 and March 2015. Since then, we have continued to work with key internal and external stakeholders to improve upon the plan. Individuals, agencies, and organizations involved in this plan are listed in Table 14.3.

Table 14.3 Individuals, agencies, and organizations involved in developing this plan ^a

First name	Last name	Affiliation
Martha	Wackenhut ^{*b}	Idaho Department of Fish and Game, Southeast Region
Quinn	Shurtliff [*]	Gonzales–Stoller Surveillance, LLC (GSS)
Becky	Abel	Idaho Department of Fish and Game, Southeast Region
Ryan	Hillyard	Idaho Department of Fish and Game, Southeast Region
Ty	Matthews	US Fish and Wildlife Service
Cary	Myler	US Fish and Wildlife Service
Devon	Green	US Forest Service, Caribou–Targhee NF
James	Kumm	Bureau of Land Management (US) (retired)
Charles	Peterson	Idaho State University
Jerry	DeBacker	Sagebrush Steppe Land Trust (retired)

^a Apologies for any inadvertent omissions.

^b An asterisk “*” denotes team leader(s) and contact point if you would like to become involved in this work.